ABB – a global leader in power technology products

As the worlds largest supplier to the power transmission and distribution industry, we focus on the development of new technologies and solutions that enable our customers to deliver superior quality power as efficiently, reliably and competitively as possible.

Innovative solutions strengthen our existing technology platform, which covers the entire transmission and distribution spectrum. Our Power Technology products range from transformers, high voltage and medium voltage equipment including circuit breakers, indoor panels, instrument transformers, disconnections and capacitors & reactive power compensators. Our main research in these fields is in new materials, insulation, conduction, limitation and interruption, electromagnetic interference and standardizing electrical systems engineering.

We offer a complete range of medium voltage equipment for primary and secondary distribution with voltages ranging from 1kV up to 40kV. Our portfolio includes indoor air insulated and gas insulated panels with vacuum and SF6 gas circuit breakers, outdoor vacuum and SF6 gas circuit breakers, auto-reclosers, fuses, switch disconnectors, prefabricated modular solutions for power distribution among others.

ABB believes in the importance of innovation to bring about a better environment and we are developing new technologies to achieve significant resource savings and reduced environmental impact. For example the ‘Dryformer’ – an oil-free, cable-wound power transformer. To further reduce emissions and to conserve the world’s energy and raw material resources, we are striving to optimize the efficiency of all energy-consuming products and promote energy-saving technologies.

**Industrial IT**

The VBF circuit breaker is certified as complying with the ABB industrial IT architecture. In this architecture VBF circuit breaker is part of the Power IT suite. The products complying with the Industrial IT architecture can be effectively integrated in a system with high added value and a true ‘Plug & Produce’ mode.

This product has been tested and certified as Industrial IT Enabled, Level 0 - Information. All product information is supplied in interactive electronic format, compatible with ABB Aspect Object™ technology. The Industrial IT commitment from ABB ensures that every enterprise building block is equipped with the integral tools necessary to install, operate, and maintain efficiently throughout the product lifecycle.

Further information about the advantages of ABB Industrial IT architecture is available at the following site: [www.abb.com/industrialit](http://www.abb.com/industrialit).

Site installation of outdoor VCB type VBF
**Salient features**

- Designed and type tested as per IEC 62271-100/IS:13118 & ANSI C37.09
- Vacuum interruption
- Porcelain clad construction which is suitable for outdoor substations that provides safety from fire hazards
- Guaranteed for long electrical life with proven vacuum interrupters utilising the excellent arc quenching and insulating properties of vacuum
- Restrike free and suitable for auto closure duty cycle of “O-0.3sec-CO-3min-CO” and CO-15s-CO
- Minimal operating energy required due to simple, reliable and proven low energy spring mechanism used. The mechanism is guaranteed for long mechanical life
- Simple installation - structure mounted with an option to extend structure for mounting instrument transformer
- The complete breaker can be shipped as one unit – bare minimum adjustments being required at site. As an option the breaker can be shipped in knocked down kits and can be easily assembled at site.

**Construction**

**Pole assembly**

The pole assembly consists of 3 poles and a common duct. A single pole contains a vacuum bottle, current transfer contacts and an insulating pull rod placed in a porcelain housing. The housing provides mechanical strength, safety from fire hazards as well as environmental protection thus making it suitable for outdoor application. Several primary terminal connectors can be offered, such as NEMA 4. Due to simplicity of design, spare parts are reduced to minimum. All three poles are mounted on a common duct placed above the cabinet. Spline shafts of the poles are interconnected to the other poles as well as to the operating mechanism through suitable linkage arrangement.

**Base cabinet**

The base cabinet is made of painted mild steel. For harsh environmental conditions option of galvanized steel is available, which has higher corrosion resistance. The cabinet houses the spring operating mechanism which is mechanically linked to all the three poles. The cabinet also includes the following:

- Anti-condensation heater
- Circuit breaker status indicator
- Mechanical operation counter
- Breaker control switches
- Anti-pumping relay
- AC/DC Fuses
- Auxiliary wiring
- Terminal blocks
Operating mechanism

To attain high operational reliability and negligible maintenance, a simple, robust, spring operated mechanism is used.

Features

- O-C-O operation without recharging
- Closing spring is charged by motor in less than 15 secs.
- Mechanical / electrical anti-pumping
- Provision for manual charging
- Suitable for high speed auto reclosing
- Manual closing and tripping arrangement
- Mechanical ON-OFF and SPRING CHARGED indication

The operating mechanism is also provided with the following optional items:

- Auxiliary switch; 6NO+6 NC (standard):
  12 NO+12 NC (Optional)
- Additional tripping solenoid

Certified routine test reports

Each breaker is tested for the following routine tests in the factory as per ANSI C 37.09 and IEC - 62271-100.

- Verification of components
- Nominal, low, high closing coil voltage:
  i.e. at 85%, 110% & 100% of nominal voltage*
- Nominal, low, high tripping coil voltage:
  i.e. at 70%, 110% & 100% of nominal voltage*
- Nominal, low, high spring charging motor voltage at 85%, 110% & 100% of nominal voltage*
- Trip free operation
- Control wiring: 2000V to ground for 1 minute (if applicable)
- Power frequency voltage withstand test for 1 minute at 70kV
- Opening and closing speed
- Contact resistance
- Anti-pumping test

*Special voltage levels available on request
Quality assurance

All of ABB’s manufacturing facilities in India are ISO 9001 certified which reflects ABB’s commitment to quality. ABB is equally committed to environmental sustainability. The Nashik facility is certified under ISO 14001.

Mounting structure

A sturdy extruded steel angle structure is used for mounting the breaker. The same can be extended for mounting the current transformers against specific customer requirement.

Transport, erection, commissioning & maintenance

To keep the erection time minimum, the breaker is transported as an assembled unit mounted on a small support leg assembly, which is replaced by the standard mounting structure at site. The standard mounting structure is supplied separately along with the breaker. The circuit breaker is designed to keep maintenance work as low as possible. Refer to operating manual for further details.

Applications

- Distribution networks
- Capacitor switching
- Frequent switching duties
- Arc furnace duty
- Rapid auto reclosing
- Switching unloaded transformers & reactors
## Technical details

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit breaker type</td>
<td>–</td>
<td>VBF36.16.25</td>
</tr>
<tr>
<td>Rated Voltage</td>
<td>kV</td>
<td>36</td>
</tr>
<tr>
<td>Power Freq. withstand voltage</td>
<td>kVrms</td>
<td>70</td>
</tr>
<tr>
<td>Impulse withstand voltage</td>
<td>kVpeak</td>
<td>170</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>Hz</td>
<td>50</td>
</tr>
<tr>
<td>Creepage dist to earth</td>
<td>mm</td>
<td>900</td>
</tr>
<tr>
<td>Rated normal current</td>
<td>A</td>
<td>1600</td>
</tr>
<tr>
<td>Rated breaking current</td>
<td>kA</td>
<td>26.3</td>
</tr>
<tr>
<td>Rated short time withstand current</td>
<td>kA for 3 sec</td>
<td>26.3</td>
</tr>
<tr>
<td>Rated making current</td>
<td>kApeak</td>
<td>65.75</td>
</tr>
<tr>
<td>First pole to clear factor</td>
<td>–</td>
<td>1.5</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>–</td>
<td>O-0.3sec-CO-3min-CO /CO-15s-CO</td>
</tr>
<tr>
<td>Opening time</td>
<td>ms</td>
<td>50 ± 10</td>
</tr>
<tr>
<td>Total break time</td>
<td>ms</td>
<td>65 ± 10</td>
</tr>
<tr>
<td>Closing time</td>
<td>ms</td>
<td>60 ± 10</td>
</tr>
<tr>
<td>Reclosing time</td>
<td>ms</td>
<td>300</td>
</tr>
<tr>
<td>Contact stroke</td>
<td>mm</td>
<td>20</td>
</tr>
<tr>
<td>No. of breaks / pole</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>Kg</td>
<td>800</td>
</tr>
</tbody>
</table>

Data and illustration without engagement. We reserve the right to make changes in the course of technical development.